

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. (currently amended): ~~Method~~ A method for using the complete resource capacity of a synchronous digital hierarchy network, subject to a protection mechanism, in the presence of a data (packet) network, said network comprising nodes bidirectionally transmitting time division multiplex (TDM) and ~~Data~~ data traffic over Working and Protection capacity/channels, wherein ~~said method comprises the following steps~~, in case of a failure at the affected nodes, said method comprising:

cutting the working capacity ~~is cut~~;

subjecting the TDM traffic ~~is subject~~ to said protection mechanism, and ~~is shifted~~ shifting the TDM traffic over the protection capacity;

shifting a part of high priority data traffic ~~is shifted~~ over the protection capacity; and a part of low-priority data traffic, transported over the protection capacity in normal conditions, ~~is caused to share~~ shares the ~~a~~ remaining protection capacity with ~~the a~~ low-priority part of the data traffic, transported over the working capacity in normal conditions, ~~in such a way as~~ wherein the complete protection capacity is used to carry data traffic in both normal and failure conditions.

2. (currently amended): ~~Method~~ The method according to claim 1, ~~wherein said method comprises the further step of~~ further comprising reserving a part of the protection capacity to carry NUT (Not pre-emptive Unprotected Traffic) (NUT) data traffic during ~~in both~~

normal condition and a failure ~~conditions~~condition.

3. (currently amended): ~~Method~~The method according to claim 1, wherein said sharing of the remaining protection capacity for carrying the low priority data traffic is made by applying a function of statistical multiplexing to said low priority data traffic coming from both the working capacity and the protection capacity, ~~so as~~wherein in case of a failure there is ~~not a service interruption, but~~ only a service degradation and no service interruption.

4. (currently amended): ~~Method~~The method according to claim 2, wherein said sharing of the remaining protection capacity for carrying the low priority data traffic is made by applying a function of statistical multiplexing to said low priority data traffic coming from both the working capacity and the protection capacity, ~~so as~~wherein in case of a failure there is ~~not a service interruption, but~~ only a service degradation and no service interruption.

5. (currently amended): ~~Method~~The method according to claim 1, wherein in said network nodes, an Actuator function is performed on the a connection matrix of the a cross-connect, whereby in case of a failure, ~~the~~ new matrix connections to the protection capacity are established in order to restore the failed working capacity, said Actuator function causing the performing of the following actions on said protection capacity, in case of a failure:

squelching partially the low priority traffic, present before the failure, and pre-empting only ~~the a part~~ of the low priority traffic necessary for carrying said TDM and said high priority data traffic;

Bridge and Switch: comprising acting on the cross-connection matrix to restore the TDM and high priority data traffic; and

balancing the access for the low priority data traffic to the remaining spare capacity by

said statistical multiplexing.

6. (currently amended): ~~Method~~ The method according to claim 2, wherein in said network nodes, an Actuator function is performed on ~~the~~ a connection matrix of ~~the~~ a cross-connect, whereby in case of a failure, ~~the~~ new matrix connections to the protection capacity are established in order to restore the failed working capacity, said Actuator function causing the performing of the following actions on said protection capacity, in case of failure:

 squenching partially the low priority traffic, present before the failure, and pre-empting only ~~the~~ a part of the low priority traffic necessary for carrying said TDM and high priority data traffic;

 Bridge and Switch: comprising acting on the cross-connection matrix to restore the TDM and high priority data traffic; and

 balancing the access for the low priority data traffic to the remaining spare capacity by said statistical multiplexing.

7. (currently amended): ~~Method~~ The method according to claim 3, wherein in said network nodes, an Actuator function is performed on ~~the~~ a connection matrix of ~~the~~ a cross-connect, whereby in case of a failure, ~~the~~ new matrix connections to the protection capacity are established in order to restore the failed working capacity, said Actuator function causing the performing of the following actions on said protection capacity, in case of failure:

 squenching partially the low priority traffic, present before the failure, and pre-empting only ~~the~~ a part of the low priority traffic necessary for carrying said TDM and high priority data traffic;

 Bridge and Switch: comprising acting on the cross-connection matrix to restore the TDM

and high priority data traffic; and

balancing the access for the low priority data traffic to the remaining spare capacity by said statistical multiplexing.

8. (currently amended): ~~Method~~ The method according to claim 1, wherein said network is a ring network subject to a MS/SPRING protection mechanism.

9. (currently amended): ~~Network node~~ A network node for carrying out the method of claim 1, wherein said network node comprises:

a first switching element to switch the TDM traffic over the TDM part of the working channels, in the non-failure condition, or over the protection capacity in case of failure;

a second switching element for the data traffic, comprising circuits to perform the following actions:

recognizing the class of service of the input data, wherein said input data comprises said high or low priority data traffic; and

assigning the data traffic to ~~the~~ a correct output on said working or protection capacity in both non-failure and failure conditions, so as in failure conditions all the high priority data traffic is switched over the protection capacity, and the low priority data traffic is switched over the protection capacity according to said function of statistical multiplexing.

10. (currently amended): ~~Network~~ The network node according to claim 9, wherein said second switching element comprises:

an input mapper module for the said recognizing of the class of service of the input data;

a load balancer module for the said assigning of the data traffic to the correct output in both non-failure and failure conditions, said load balancer comprising circuits for:

dividing the high priority from the low priority data by mapping them in different Virtual Containers (VCs) of the synchronous digital hierarchy frames;

applying the said function of statistical multiplexing for the low priority data traffic to access the dedicated VCs; and

balancing the low priority data traffic in both non-failure and failure conditions, so as in failure conditions said low priority data traffic is switched over the protection capacity according to said function of statistical multiplexing.

11. (currently amended): ~~Synchronous~~ A synchronous digital hierarchy network, subject to a protection mechanism, with a data (packet) network deployed over ~~the synchronous digital hierarchy network~~, said network comprising means for performing the method of claim 1.

12. (currently amended): ~~Synchronous~~ A synchronous digital hierarchy network, subject to a ~~pro-tection~~ protection mechanism, with a data (packet) network deployed over ~~the synchronous digital hierarchy network~~, said network comprising network nodes according to claim 9.

13. (new): A method for using the complete resource capacity of a synchronous digital hierarchy network, said network comprising nodes bi-directionally transmitting time division multiplex (TDM) and data traffic over a working capacity and a protection capacity, wherein in case of a failure, said method comprising:

subjecting the TDM traffic to said protection mechanism, and shifting the TDM traffic over to the protection capacity;

shifting data, having at least one of a first class of service from a working capacity and a second class of service from a working capacity, to the protection capacity;

shifting data, having at least one of the second class of service from the working capacity and a third class of service from the working capacity, to the protection capacity;

wherein the protection capacity is shared by the data having at least one of the first class of service from the working capacity and the second class of service from the working capacity, the data having at least one of the second class of service from the working capacity and the third class of service from the working capacity, and data having the third class of service from the protection capacity, wherein all of the protection capacity is used to carry data traffic.

14. (new): The method according to claim 13, wherein said first class of service comprises high priority data having a guaranteed bandwidth,

wherein said second class of service comprises medium priority data having guaranteed bandwidth and non-guaranteed bandwidth, and

wherein said third class of service comprises best-effort data traffic having non-guaranteed bandwidth.